

9 February 1959

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MEMORANDUM FOR: Deputy Director, DPD-DD/P

ATTENTION: [REDACTED]

SUBJECT: Project "G"

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REFERENCE: Memo to [REDACTED] from C/PIC/TISD,
dtd 16 December 1958

1. Statement of the Problem:

To determine the specifications for a visible light photographic collection system, compatible with the physical vehicular characteristics, which will produce the highest quality photographic images possible at the present state of the art.

2. Facts Bearing on the Problem:

Vehicle speed and altitude
Space and weight limitations
Compatibility of existing exploitation equipment
and technique with proposed systems
Desirability to increase metrical potential
Lead-time for production of collection and exploitation
equipment
Simplicity and reliability of operation
Film load
Cost
Investigation of feasibility of incorporation of
recent advances in the increase of image quality.

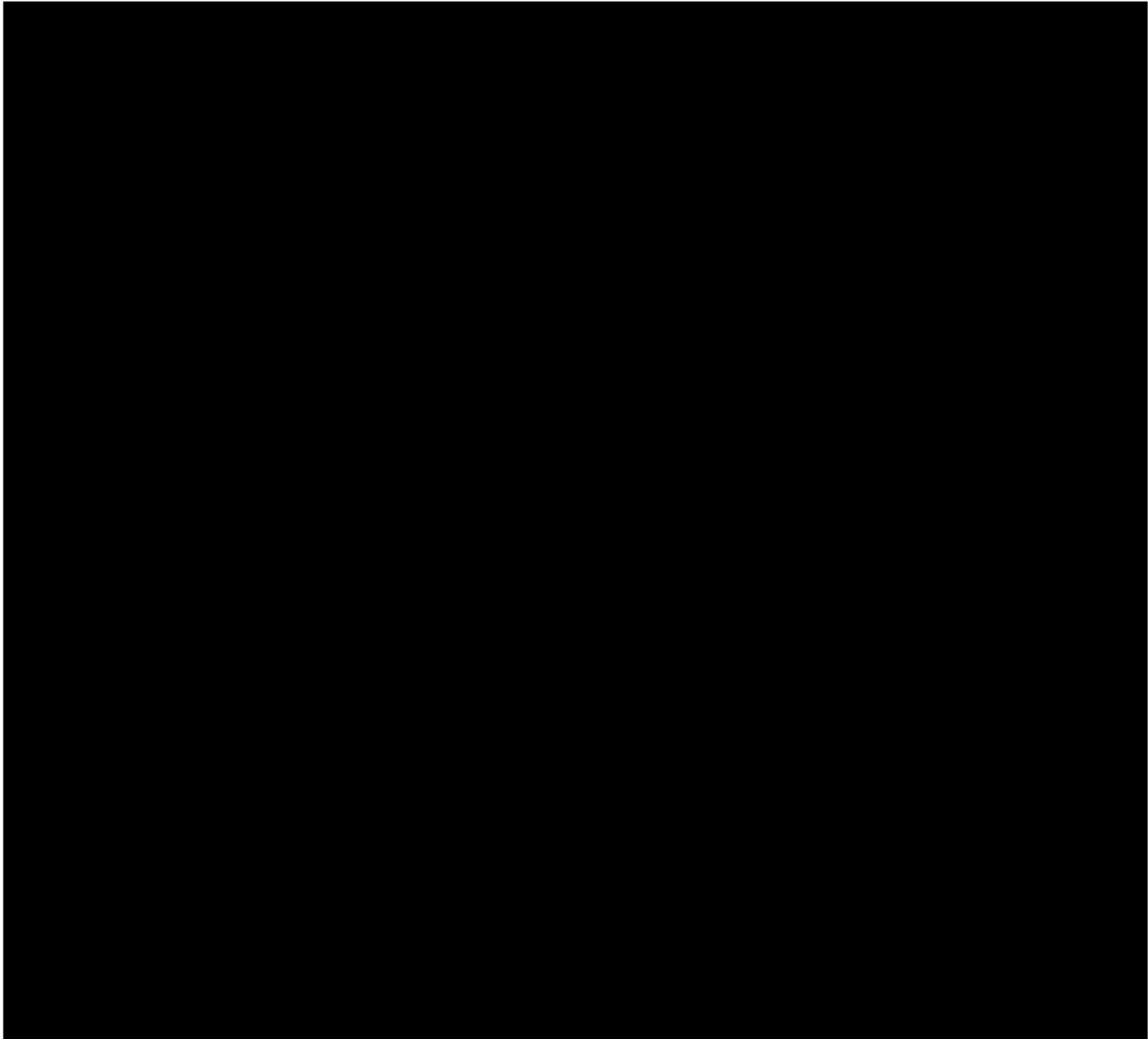
3. Discussion:

To date, three manufacturers have submitted proposals for review. These have been generally aimed at satisfying a list of basic specifications prepared for the then SA/PD/DCI by PIC/TISD in December 1958 (Reference).

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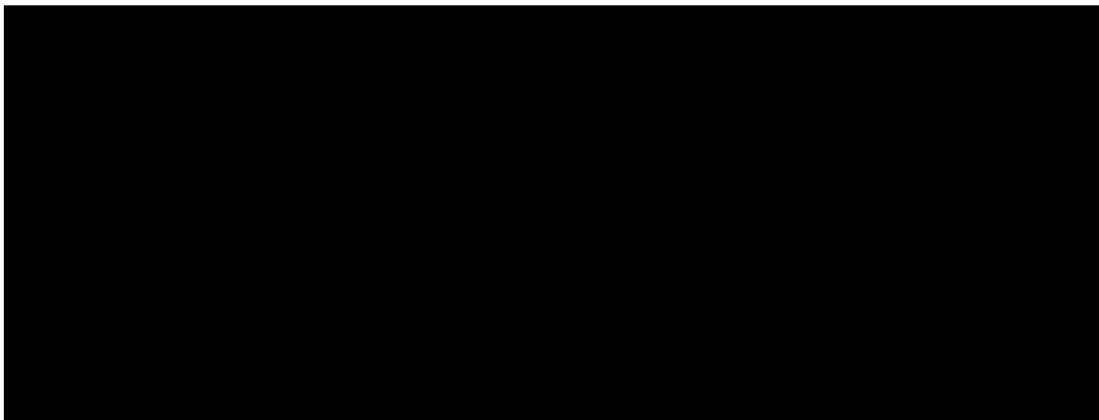
A. Perkin-Elmer Corp. proposal -
[REDACTED]

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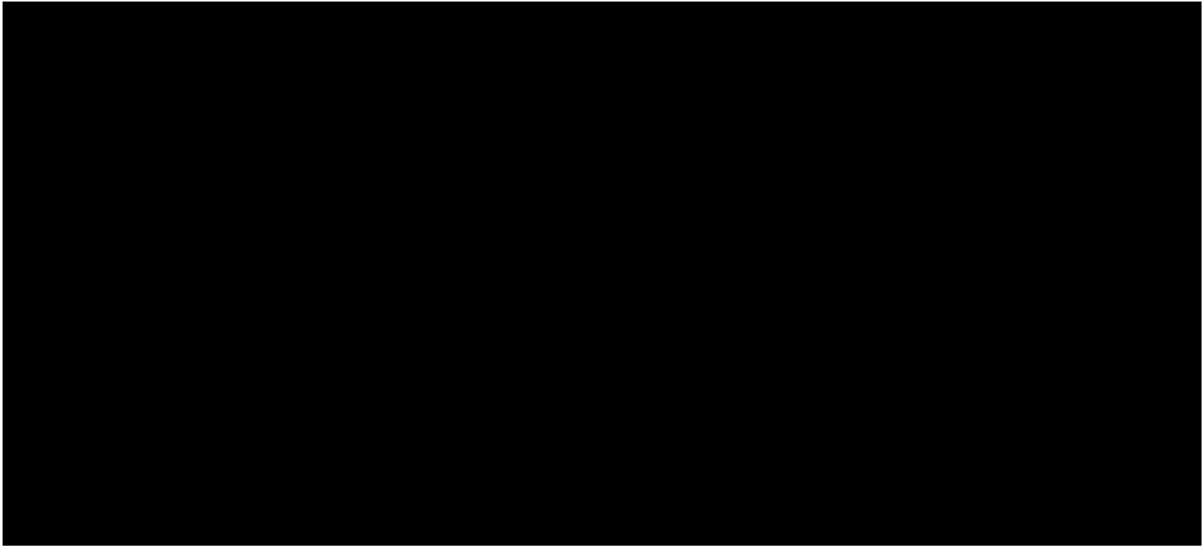
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B. Fairchild Camera and Instrument Corp. proposal -



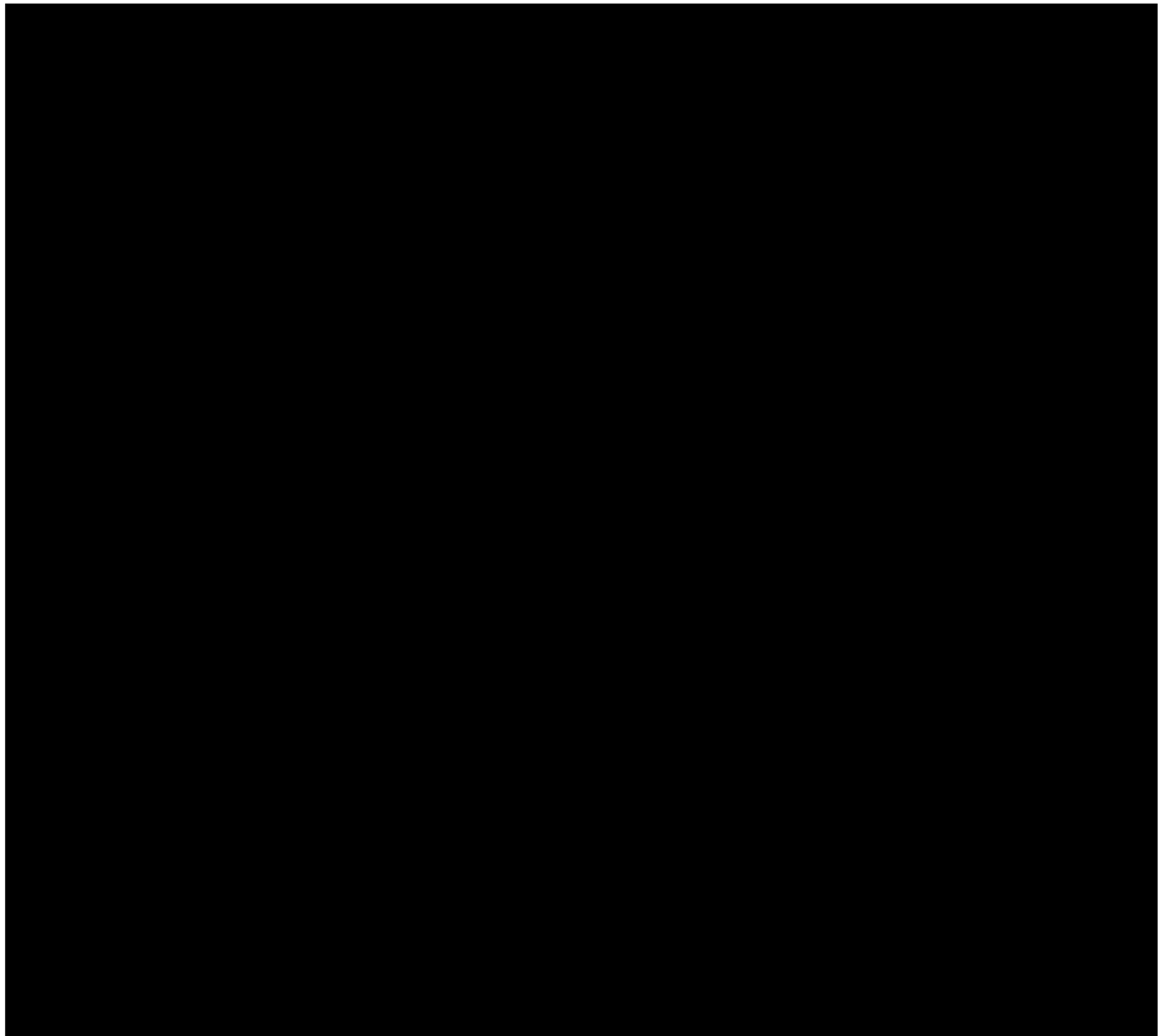
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C. Itek Proposal:

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4. Other Factors:

It is recognized by PIC that panoramic (cylindrical section) photography exposed in a convergent attitude will present exploitation problems. However, it is felt that the advantages gained will offset the disadvantages. Basically the problem resolves itself to this:

A. Photo interpretation analysts will not be able to make simple measurements from contact photos because all photos will be low obliques at the nadir. The photos will need rectification for this purpose. On the other hand, scale number tables can be prepared on the electronic computer to aid the PI in this task. The electronic rectifier currently under development at Hycon will be able to handle this, but only on a selected basis as time is a significant factor.

B. Rectified images of the P&E proposed system, using [REDACTED] film with [REDACTED] image format and max. [REDACTED] lateral obliquity, will be [REDACTED] at the max. lateral dimension and can be viewed stereoscopically on Bausch and Lomb stereo-viewers currently being manufactured for use with "B" configuration photography.

C. The PIC photographic laboratory, with its present processing and duplicating equipment should encounter no serious problems with the P&E proposed film sizes, as all equipment is designed to accommodate film up to [REDACTED] wide.

D. The Wild stereo-microscopes presently under procurement, with max. 50x magnification, should enable adequate detailed exploitation of the high resolution products proposed.

E. Presently available measurement and computation equipment at PIC can accommodate the formats and resolutions predicted, with the possible modification of higher magnification eye piece in the Mann and Nistri comparators.

F. It would appear at this time, from a PIC photographic analysis and exploitation position, that the ideas proposed are generally compatible with present and planned exploitation instrumentation and technique, with the modification and addition of only a few items. The man-power for adequate and timely analysis and reporting will, of course, be contingent upon the input rate of raw material.

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G. Attachment 1 represents the results of a mathematical analysis of height measurement improvements which can be achieved with a convergent camera system. Summarized, the results show that a [REDACTED] offset (total [REDACTED] convergence) of each camera exposure will enable Z (height) measurements to almost twice the accuracy of those obtainable with the present A-2 configuration photography. This has been a serious limitation in the metrical exploitation of "T" material.

5. Recommendations:

It is suggested that any attempt at making final recommendations be postponed until revisions of present proposals have been received.

Items to be added to the Itek revised proposal included under 3a, b, c, & d should be made known to both P&E and FCIC so that they can also make known their ideas concerning these items.

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[REDACTED]
[Signature] ARTHUR C. LUNDAHL V
Director,
Photographic Intelligence Center

Attachment 1: Mathematical analysis
of stereo-enhancement benefits
achieved by convergent camera
attitudes.